

## Sarcoglycan sub-complex and Satellite cells in masseter muscle of crossbite patients

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Crossbite is a lateral misalignment of the dental arches. Subjects with unilateral posterior crossbite exhibit different kinematics of the mandible during mastication when chewing on the affected side, resulting in an increased frequency of reverse chewing cycles; moreover, the masseter of the affected side results less active than the counterpart (Piacino et al., 2006). An our immunofluorescence study on masseter muscle of crossbite patients has shown that in the affected side there is a lower expression of muscle specific integrins than the counterpart (Cutroneo et al., 2012). So, we hypothesized that integrins could be correlated with contraction activity in mastication, maybe promoting the production of new muscle fibers. Another our tractography study on crossbite patients has shown an increment of muscle fibers number in non affected side. On this basis in the present work we investigated the number of satellite cells in masseter muscle of crossbite patients, both in affected and non affected side. Since the existence of a bidirectional signaling between integrins and sarcoglycans we have also investigated the expression of the sarcoglycan sub-complex. Results show that the number of satellite cells in non affected side is higher than affected side. Moreover, in according with our previous results about integrins, even the sarcoglycan sub-complex show to be less expressed in the affected side than the counterpart. These data support that in non affected masseter muscle a new fibers production activity takes place which, in turns, determines a muscular hyperplasia. Based on our results, the myogenesis in masseter muscle could be regulated by sarcoglycan and integrin protein systems.

### References:

- Piacino et al. (2008) Reverse-sequencing chewing patterns before and after treatment of children with unilateral posterior crossbite. *Eur J Orthod* 28: 480-484.
- Cutroneo et al. (2012) Expression of muscle-specific integrins in masseter muscle fibers during malocclusion disease. *Int J Mol Med* 30(2):235-42.

### Keywords

Sarcoglycans, masseter muscle, malocclusion, crossbite, satellite cells.